***Amendments to the Drawings***

The attached replacement sheet of drawings includes changes to Fig. 1. This sheet, which includes Fig. 1 – 2, replaces the original sheet including Fig. 1 – 2. Fig. 1 has been amended to include previously omitted element 20 described on page 12, last paragraph of Applicant's Specification. Applicant submits that the amendment made to the drawings does not incorporate new matter. For the Examiner's convenience, Applicant also submits herewith an annotated sheet showing the changes made to Fig. 1.

Attachment: Replacement Sheet, Fig. 1 – 2.
Annotated Sheet Showing Changes

***Response/Arguments***

## A. Claims In The Case

Claims 4 – 23 are rejected. Claims 12 and 16 – 23 have been cancelled without prejudice. Claims 4 and 10 have been amended. Claims 24 – 30 have been added. Claims 4 – 11, 13 – 15 and 24 – 30 are pending in the case.

## B. The Claims Are Not Indefinite

The Examiner rejected claims 10 – 15 under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner states "Claim 10 recites a 'molding pressure' range from '100 $kg/cm^2$ to 100 $kg/cm^2$', as if a single value may be the entire range. Claim 11 – 15 depend from 10 and would likewise be indefinite."

Applicant has amended the language of claim 10 for clarification. Amended claim 10 recites a combination of features that include "a molding pressure of from about 100 $kg/cm^2$ to about 1000 $kg/cm^2$."

Applicant submits that the amended claims are definite pursuant to 35 U.S.C. §112. Applicant respectfully requests removal of the rejections of claims 10 – 15.

## C. The Claims Are Not Anticipated By Emanuelson

The Examiner rejected claims 4 – 6, 8, 10 – 12 and 15 under 35 USC §102(b) as being anticipated by US Patent No. 3,755,243 granted to Emanuelson et al. (hereinafter referred to as Emanuelson). The Examiner asserts that Emanuelson teaches a "process for making a fuel cell

separator plate, from graphite and phenolic resin (column 2, lines 1 – 30). The resin constitutes from 5 to 25 weight percent of the plate, preferably 20 percent (column 4, lines 13 – 17). The graphite and resin are first pressed at low temperature and pressure ... then pressed at a temperature of 300 to 400 °F (148 to 204 °C) and a pressure of at least 2,500 psi (180 $kg/cm^2$) ..." (column 3, line 42 - column 4, line 6).

The standard for "anticipation" is one of fairly strict identity. To anticipate a claim of a patent, a single prior source must contain all the claimed essential elements. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 U.S.P.Q.81, 91 (Fed.Cir. 1986); *In re Donahue*, 766 F.2d 531, 226 U.S.P.Q. 619, 621 (Fed.Cir. 1985). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicant has amended the language of claims 4 and 10. Amended claims 4 and 10 recite a combination of features that include "combining and mixing a phenol, a formaldehyde and a graphite powder with a reaction catalyst to produce a resin-coated graphite powder." Applicant submits that the amendments made to claims 4 and 10 are supported by the specification at least on page 7, line 18 to page 11, line 8 and Examples 1 – 3. For example, Applicant's specification recites:

> In an embodiment, the resin-coated graphite powder can be produced by a method in which the polymerization reaction of the resin takes place on the surface of the graphite powder during the stirring of the resin raw material solution. For example, in the case of forming a phenol resin coating, a graphite powder is added to a reaction container loaded with phenols, formaldehydes, a reaction catalyst, and another general reaction solvent. The mixture is heated to a prescribed temperature while being mixed and stirred to produce a resin-coated graphite powder. The phenol resin adheres to the surface

> of the graphite powder and enters in lamellar graphite powder to firmly stick to the graphite powder. (Specification, page 7, lines 18 – 25).

Applicant asserts than Emanuelson fails to teach the combined features of the amended claims 4 and 10, or any claims depending therefrom. Rather, Emanuelson appears to teach preparing a mixture of phenolic resin and powdered graphite, then heating the mixture under pressure in a mold to achieve a high-density graphite structure. For example, Emanuelson recites:

> "... a method of forming a high density graphite structure comprises preparing a mixture of, by weight, five to twenty-five percent thermosetting phenolic resin binder and 75 to 95 percent sized powdered graphite, by mixing the resin binder with a liquid dispersant, blending the powdered graphite with the resin binder and dispersant to form a slurry, drying the slurry to drive off the dispersant, distributing a predetermined quantity of the graphite and binder mixture in a mold, applying less than about 100 psi pressure to the mold ...". (Col. 2, lines 9 – 18).

Applicant submits that Emanuelson fails to teach or suggest the combined features of amended claims 4 and 10, including but not limited to the feature of mixing and reacting phenols, formaldehydes and graphite powder with a reaction catalyst to produce a phenol resin-coated graphite powder. Rather, the teachings of Emanuelson appear to consist of mixing powdered graphite with a thermosetting phenolic resin binder, pressing the mixture at a low temperature and pressure, then pressing the mixture at a temperature of 300 to 400 °F and pressure of at least 2,500 psi. Applicant's system, in contrast, includes using graphite powder as the intercalation compound, upon which the hexacarbocyclic benzene rings are adsorbed and polymerize to form a layer. By adding graphite powder to a phenolic resin reaction system comprising phenols and formaldehydes, forming a layer of phenolic resin on the surface of individual graphite powder particles is facilitated.

For at least these reasons, Applicant submits that Emanuelson fails to teach or suggest the combined features of amended claim 4 and 10, or any claims depending therefrom.

**D. The Claims Are Not Anticipated By Mizuno**

The Examiner rejected claims 16 – 20 and 23 under 35 U.S.C. §102(e) as being anticipated by U.S. Application No. 2002/0004156, by Mizuno (hereinafter referred to as Mizuno).

Applicant has cancelled claims 16 – 20 and 23 without prejudice. Applicant respectfully requests the removal of the 35 U.S.C. §102(e) rejection.

**E. The Claims Are Not Obvious Over Emanuelson**

The Examiner rejected claims 7 and 9 under 35 U.S.C. §103(a) as being obvious over Emanuelson. Claim 7 recites a combination of features that includes "wherein the molded body comprises a resin content of about 14 wt.% to 18 wt.%." Claim 9 recites a combination of features that include "wherein the separator comprises a thickness of about 1 mm to 3mm."

The Examiner states that a resin present in the range of 14 – 18 wt.% "falls within the disclosed range of 5 to 25 wt.%. Since amounts of components would have an effect on electric conductivity (graphite) and mechanical strength (resin), their proportions would be a result-effective variable." The Examiner further states that Emanuelson teaches, "the thickness of the plate may vary. Because separator thickness would have an effect of the mechanical strength of the fuel cell stack and its overall size, it would also be recognized as a result-effective variable". The Examiner argues that optimization of these variables be within the ordinary skill level of the ordinary artisan.

Applicant submits that, for at least the reasons cites above, Emanuelson fails to teach or suggest the combination of features found in amended claims 4 or 10, or any claims depending therefrom. Applicant respectfully requests removal of the rejection of claims 7 and 9 under 35 U.S.C. §103(a).

## F. The Claims Are Not Obvious Over Mizuno In View Of Shigeta Or Hand

The Examiner rejected claim 21 under 35 U.S.C. §103(a) as being unpatentable over Mizumo in view of U.S. Patent No. 4,664,988 granted to Shigeta et al. or by U.S. Application No. 2002/0064701, by Hand et al.

Applicant has cancelled claim 21 without prejudice. Applicant respectfully requests the removal of the 35 U.S.C. §103(a) rejection.

## G. The Claims Are Not Obvious Over Mizumo In View Of Emanuelson

The Examiner rejected claim 21 under 35 U.S.C. §103(a) as being unpatentable over Mizumo in view of Emanuelson.

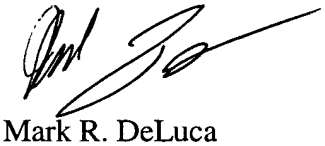
Applicant has cancelled claim 21 without prejudice. Applicant respectfully requests the removal of the 35 U.S.C. §103(a) rejection.

## H. Summary

Based on the above, Applicant submits that all claims are now in condition for allowance. Favorable reconsideration is respectfully solicited.

Applicant encloses herewith a fee authorization in the amount of $86.00 to cover the cost of one independent claim in excess of three. Applicant believes no other fees are due with this response. If any extension of time is required, Applicant hereby requests the appropriate extension of time. If any fees are inadvertently omitted or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account Number 50-1505/5682-00300/EBM

Respectfully submitted,



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